



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/975,004	10/12/2001	Ken Kasagi	053969-0130	8549

22428 7590 07/14/2004

FOLEY AND LARDNER  
SUITE 500  
3000 K STREET NW  
WASHINGTON, DC 20007

EXAMINER

AU, SCOTT D

ART UNIT	PAPER NUMBER
----------	--------------

2635

DATE MAILED: 07/14/2004

8

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/975,004

Applicant(s)

KASAGI, KEN

Examiner

Scott Au

Art Unit

2635

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-5 and 7-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-5 and 7-9 is/are allowed.
- 6) ☒ Claim(s) 10,12,13 and 15-17 is/are rejected.
- 7) ☒ Claim(s) 11 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This communication is in response to applicant's response to an Amendment A, which is filed April 23, 2004.

An amendment A to the claims 1-9 have been entered and made of record in the Application of Kasagi for the "Short range radio continuous communication method and system" filed October 12, 2001.

Claims 1,3-5 and 7-17 are pending.

Claims 2 and 6 are cancelled.

### ***Response to Arguments***

Applicant's arguments with respect to claims 10-17 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10,12-13 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shigenaga et al. (US# 5,554,984) in view of Tiernay et al. (US# 6,661,352).

Referring to claims 10 and 13, Shigenaga et al. disclose a short range radio communication method and system for use in a DSRC (Dedicated Short Range Communication) system using an ETC (Electronic Toll Collection), said method comprising the steps of:

arranging a plurality of roadside antennas along a direction of travel of vehicles utilizing a roadway; said plurality of antennas spaced from one another in the direction of vehicle travel such that a given antenna among said plurality of antennas has a communication range along said direction of travel that overlaps with a communication range along said direction of travel of adjacent antennas among said plurality of antennas (col. 2 lines 45-51, col. 4 lines 15-34 and 61-67, col. 6 lines 56-64 and col. 14 lines 38-67). However, Shigenaga et al. did not explicitly disclose time sharing an operation of said plurality of roadside antennas by synchronizing sending timing of a communication frame in each of said plurality of roadside antennas; and receiving a communication frame transmitted from one of said adjacent roadside antennas during communication with said given one of said roadside antennas in an on-vehicle device which includes a radio set mounted on a vehicle for performing communication with said roadside antennas.

In the same field of endeavor of an RF roadway toll collection method and system, Tiernay et al. disclose means time sharing an operation of said plurality of roadside antennas by synchronizing sending timing of a communication frame in each

of said plurality of roadside antennas; and an on-vehicle device comprising a radio set mounted on said vehicle and performing communication with said plurality of roadside antennas, wherein said on-vehicle device includes means for receiving a communication frame transmitted from said at least one of said adjacent roadside antenna in a time share manner. (col. 3 lines 59-67 and col. 4 lines 42-50) in order for the toll system to observe the transactions of vehicle with transponder coming through the toll lanes.

One of ordinary skill in the art understands that the method and system of using TDMA protocol in toll collection of Tiernay et al. is desirable in toll collection method of Shigenaga et al. because Shigenaga et al. suggest the in-vehicle unit mounted in the vehicle can be performed by means of the antenna for debiting process, the personal information of a driver and the vehicle information peculiar to the vehicle can be obtained without stopping the vehicle even when the vehicles travel freely on a road having a plurality of lanes, so that the debit value corresponding to the vehicle type can be debited exactly without payment in cash. A time sharing multiple accessing method can be adopted as the communication method by means of the plurality of antennas (col. 4 lines 14-23) and Tiernay et al. teach where multiple upstream antennas are used, these are preferably sought intermittently by a transponder. The transponder is preferably time synchronized to receive a selected antenna for communication while sampling a number of antennas, say four, for comparative quality of service, i.e. transmission and reception. An algorithm preferably provides control of a switch for changing antennas and to call for switching at any time from one antenna to an

antenna whose quality of service is consistently highest. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to include time sharing operation is performed by synchronizing sending timing of a TDMA communication frame in all of said roadside antennas, comprising: a step for receiving a TDMA communication frame transmitted from an adjacent roadside antenna during the communication with one of said roadside antennas in an transponder which is mounted on a vehicle and performs the communication with said roadside antennas of toll collection method and system disclosed by Tiernay et al. in the toll collection method and system of Shigenaga et al. with the motivation for doing so would the toll collection system to observes and prevent interference between the antennas.

Referring to claim 12, Shigenaga et al. in view of Tiernay et al. disclose a short range radio communication method of claim 10, Tiernay et al. disclose further comprising: a DSRC control step for performing DSRC protocol processing in each of a plurality of roadside devices (34) (i.e. lane based readers) which are provided corresponding to said plurality of roadside antennas, and wherein said time sharing operation is performed by practicing synchronization among all of said plurality of roadside devices (col. 4 lines 42-50, col. 8 lines 55-65 and col. 9 lines 26-37).

Referring to claim 16, Shigenaga et al. in view of Tiernay et al. disclose a short range radio communication system of claim 13, Shigenaga et al. disclose further

wherein each of said plurality of roadside antennas are provided with a device which includes a DSRC control section for performing DSRC protocol processing, and said time sharing operation is performed by synchronizing all of said DSRC control sections (col. 4 lines 15-35, col. 6 lines 57-64 and col. 8 lines 18-29).

Referring to claim 17, Shigenaga et al. in view of Tiernay et al. disclose a short range radio communication system of claim 13, Shigenaga et al. disclose further wherein a communication content transmitted by said given antenna in said one communication frame is different from the communication content transmitted by said at least one adjacent antenna in said another communication frame (col. 6 lines 57-64). Shigenaga et al. indicate that the communication range is with 1 meter to about 3 meters ahead of the gantry. Therefore, the attenuator "power" is used for each antenna is different base upon the communication range.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shigenaga et al. (US# 5,554,984) in view of Tiernay et al. (US# 6,661,352) as applied to claim 13 above, and in further view of Ando et al. (US# 6,081,718).

Referring to claim 15, Shigenaga et al. in view of Tiernay et al. disclose the short range radio communication system according to claim 13 above. However, Shigenaga et al. in view of Tiernay et al. did not explicitly disclose wherein said receiving means receives the other communication frame from the adjacent roadside antenna when said

on-vehicle device is present in an overlapped communication range of said given antenna with said at least one adjacent antenna.

In the same field of endeavor of vehicle communication system for toll collection, Ando et al. disclose wherein said receiving means receives the other communication frame from the adjacent roadside antenna when said on-vehicle device is present in an overlapped communication range of said given antenna with said at least one adjacent antenna (col. 3 lines 56-65) without causing interference with both antenna units.

One of ordinary skill in the art understands that toll collection system of Ando et al. is desirable in the toll collection system of Shigenaga et al. in view of Tiernay et al. because Shigenaga et al. suggest when two in-vehicle units 1 and 2 exist within the communication area of the ANT2 and an in-vehicle unit 3 exists within the overlap portion of the communication areas of the ANT2 and ANT3, the in-vehicle units 1, 2 and 3 respond to the response request signal E from the ANT 2 to return the response signals A simultaneously, so that the three response signals A interfere with each other in the ANT2 (col. 15 lines 35-42), Tiernay et al. suggest the area capture zones are overlapped to intercept all vehicles in the zone (col. 5 lines 65-67) and Ando et al. teach the communication control unit may control the adjacent antenna units whose communication areas overlap with each other and which are set to the same frequency to perform the communication processing so that the communication periods thereof are shifted from each other by a half cycle. If the on-vehicle device communicates with the antenna unit in the overlapping communication area, therefore, the on-vehicle device can speedily and reliably communicate with either antenna unit



without causing interference with both antenna units. Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to include receiving means receives the other communication frame from the adjacent roadside antenna when said on-vehicle device is present in an overlapped communication range of said given antenna with said at least one adjacent antenna of Ando et al. in the toll collection system of Shigenaga et al. in view of Tiernay et al. with the motivation for doing so would allow all on-vehicle devices are read as the vehicles are traveling through the toll collection zone.

***Allowable Subject Matter***

Claims 1,3-5 and 7-9 are allowed.

***Claim Objections***

Claims 11 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Referring to claim 11, the following is a statement of reasons for the indication allowable subject matter: the prior art fail to suggest limitations that an FCMS detecting step for detecting an FCMS (Frame Control Message Slot) of the communication frame transmitted from said adjacent roadside antenna at stopping timing of the communicating roadside antenna; and a step for switching the communication from the

communicating roadside antenna to the adjacent roadside antenna on the basis of results detected by said FCMS detecting step.

Referring to claim 14, the following is a statement of reasons for the indication allowable subject matter: the prior art fail to suggest limitations that FCMS detecting means for detecting an FCMS (Frame Control Message Slot) of the communication frame transmitted from said adjacent roadside antenna at stopping timing of the communicating roadside antenna; and means for switching the communication from the communicating roadside antenna to the adjacent roadside antenna on the basis of results detected by said FCMS detecting means.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Au whose telephone number is (703) 305-4680. The examiner can normally be reached on Mon-Fri, 8:30AM – 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Horabik can be reached at (703) 305-4704. The fax phone numbers for the organization where this application or proceeding is assigned are (703)-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-305-3900.

Scott Au

SA

MICHAEL HORABIK  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

